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FOUNDED 1892

Sierra Club Marin Group  
P.O. Box 3058, San Rafael, CA 94912  
<http://sanfranciscobay.sierraclub.org/marin/>

Marin County Planning Commission  
3501 Civic Center Dr.  
San Rafael, CA 94903  
[MarinLCP@co.marin.ca.us](mailto:MarinLCP@co.marin.ca.us)  
Ph: (415) 499-6290 Fax: (415) 499-7880  
Attn: Kristin Drumm

March 21, 2009

RE: Comments on LCP sections: Water Quality and Environmental Hazards

Dear Planning Commissioners,

Sierra Club Marin Group has compiled a series of general statements on our overall goals for the Local Coastal Plan update, as well as comments specific to Water Quality and Environmental Hazards sections of the LCP.

We see the LCP as the archetype for maximum protection of the Coastal Zone in Marin County. It is of the utmost importance that County Planning staff use and enforce the LCP provisions when examining development proposals in the Coastal Zone. Also, staff should take a watershed view of projects on the coast which are NOT IN the Coastal Zone, but would impact the Coastal Zone areas. Staff should consider the cumulative impacts for all development or re-use proposals, with an eye to existing uses and impacts on overall West Marin and Coastal Zone resources.

The LCP is required to be consistent with the California Coastal Act. The Countywide Plan does not have the same constraints, and contains weaker regulations: the two documents cannot be combined nor are they compatible. SCMG supports using the LCP as the guide document to make revisions to strengthen the CWP's environmental protection language.

We support increasing the LCP's protections for the environment and will not accept any reduction of protections from the current LCP standards. When combining Units I and II, whichever regulatory language is stronger, should be used.

#### Environmental Hazards Comments

There are a significant number of locations in the Coastal Zone that would be considered an Environmental Hazard. A master list of all potentially hazardous sites should be created and added to the LCP. The inventory should include, but not limited to: all current and former gas stations, underground tanks, fuel storage, vehicle or boat repair; large septic systems, treatment plants, agricultural processing and factory waste, contaminated sites and any other potential hazards.

A brief evaluation report should accompany each identified site. Potential for flooding, earthquake and shaking, rupturing of pipes, landslide and other identified issues should be included in the evaluation of sites.

#### Flooding:

The staff Report (page 24) notes that FEMA requires raising a home in a flood area so that its first floor level is above the designated flood level. However, the purpose of raising the home is not simply to elevate possessions above floodwaters but also to allow floodwaters access to the area below the home. If floodwaters are not allowed to access what is defacto floodplain, then that increases pressure and flooding elsewhere in the floodplain. Many of these flood foundation increases are 5 feet or less in height and require floodwater access to equalize pressure and maintain structural stability.

However, some foundations have been proposed to be raised a much as 7 feet, thus allowing the area beneath the home to be enclosed as a storage area from which floodwaters would be excluded. If such a storage area is not within the definition of an "enclosed floor area," then the proposed limitation on enlarging this enclosed floor area does not adequately protect the defacto floodplain under the home. If so, then the LCP should have additional language that would require flood foundations to be built in ways that structurally preclude their use as enclosed storage areas and include access by floodwaters.

Furthermore, no homeowner should be allowed to construct in a floodplain berms or impermeable fencing/walls in order to protect against flooding of their own property when the cost of that defense is the resulting diversion of floodwaters onto his neighbors' property. Flood protections should be via elevation and increased floodplain access, not diversion from enclosed floodplain areas.

#### Septics:

There is new information regarding individual septic systems that may be working within current statutory limits, but that may still be a significant cumulative impact on adjacent waterbodies. We believe this merits a very much more precautionary approach to permitting new and the repair of existing septic systems until this new information can be analyzed and adopted into new regulations. We have attached the California Sea Grant notice for your review.

#### Water Quality Comments

The California Coastal Commission should continue to enforce the wetlands definition (Cowardin) and provisions in the California Coastal Act. Wetlands should be protected over all other potential uses: mitigation is NOT equal to the value of natural wetlands.

Existing LCP standards for wetlands and stream conservation setbacks currently only apply to blue line (perennial and intermittent) streams: the protections shall be extended to ephemeral streams. A West Marin Baylands corridor should be established to reduce development potential impacts between Bolinas Lagoon and the first public road and between Tomales Bay and the first public road.

Standards for water quality, agricultural uses, point and non-point sources, septic management and environmental hazards shall be consistent with current State Regional Water Quality Control Board (RWQCB) regulations and provisions. Any future revisions and updates to the RWQCB standards shall be immediately adopted in the LCP document.

Streams and drainages should remain in a natural state and above ground. Existing culverts and drainages should be improved and “daylighted” when road repairs are undertaken.

Proposed developments or improvements to parcels should minimize non-point source pollution by using permeable materials on all roads, driveways, sidewalks and patio areas.

Sierra Club Marin Group appreciates the opportunity to participate in the LCP update process.

Thank you for your consideration of our comments.

A handwritten signature in black ink that reads "Elena Belsky". The signature is written in a cursive, flowing style.

Elena Belsky  
Chair, Sierra Club Marin Group

## Septic Tanks Affect Coastal Water Quality

Contact: Christina S. Johnson, [csjohnson@ucsd.edu](mailto:csjohnson@ucsd.edu), 858-822-5334

Date: March 11, 2009

PALO ALTO - California Sea Grant researchers have strong evidence that septic tanks in Northern California are leaking nitrogen and phosphate into coastal waters that can trigger algal blooms.

Reporting in the journal *Limnology and Oceanography*, they report finding elevated levels of these "nutrients" in the surf zone during periods of high groundwater flows to the beach.

Following one of these freshwater pulses, they observed a four-day elevation in chlorophyll-a levels - a proxy for phytoplankton concentrations. Though it is extremely difficult to attribute any single algal bloom to the presence of higher than normal nutrient levels, the general link between nitrification and algal blooms is widely recognized for both marine and freshwater ecosystems.

"Our project is one of the first in California to show definitively that septic tanks can affect coastal water quality through submarine groundwater discharge," says Alexandria Boehm, a professor in the Department of Civil and Environmental Engineering at Stanford University.

Most research on septic systems has focused on their effects on terrestrial ecosystems, Boehm explains. The value of this project is that it shows they can also impact marine ecosystems via polluted groundwater discharging directly to the ocean.

In theory, the nutrient spikes detected in Northern California could have come from polluted creeks or runoff. This, however, is not what the scientists believe is happening because their fieldwork was conducted in summertime when, they say, groundwater is the only source of freshwater to the coast.

Fertilizers spread on lawns and crops could also potentially be sources of the nutrients they detected. Again, however, scientists rule out this possibility because of the concomitantly high levels of human fecal indicator bacteria detected in groundwater samples collected between the septic systems and shoreline.

Interestingly, bacteria counts in beach water samples did not rise and fall with changes in groundwater fluxes, suggesting the beach aquifer removes pathogens, says Stanford doctoral student, Nicholas de Sieyes, the lead author of the journal article. "Some of our current research is focusing on this point."

>From a scientific perspective, the researchers were not surprised to find a link between septic systems and beach water quality. "It is what we expected," D Boehm says.

The unanticipated discovery was the way in which tidal cycles modulate freshwater fluxes to the coast. Indeed, their prediction was that fresh groundwater flows would peak during spring tides, when the tidal forces of the Sun and Moon reinforce each other. Instead, the greatest pulses of exiting groundwater occurred during neap tides, when weak tidal forcing results in minimal differences between high and low tides.

In particular, they measured a fresh groundwater discharge rate of 1.2 to 4.7 liters per minute per meter during neap tides, compared with .1 to .5 liters per minute per meter during spring tides.

During neap tides, nitrogen levels rose 35 percent, phosphate levels 27 percent and silicate levels 14 percent, as compared with spring tide measurements.

Their technical explanation for the pattern is outlined in detail in their peer-reviewed work. The gist of it is that ocean water fills the beach aquifer during high spring tides, creating a sort of hydraulic mound in front of fresh groundwater. During low tides, all of this saltwater must drain back to sea before fresh groundwater can begin to exit. During neap tides, the absence of a formidable hydraulic mound results in a greater release of fresh groundwater to the beach during low tide, hence their results.

All of the fieldwork, which will continue into the summer of 2009, was conducted at Stinson Beach in Marin County because of the community's interest in protecting its beach water quality.

"We don't think our findings are unique to Stinson Beach," de Sieyes says, noting that septic systems are common along coastal counties north of San Francisco, as well as in more densely populated areas such as Morro Bay, Malibu, Rincon and Los Osos.

In recognition of the potential environmental implications for beach, ocean and river ecosystems, the California legislature has directed the State Water Resources Control Board to establish regulations on septic systems. California and Michigan are the nation's only two states without statewide regulations on septic systems.

Critics of the proposed changes cite a lack of data showing septic systems contribute to actual water-quality problems. "I think it's really important for people to know that we've quantified the impact of septic systems on the coastal ocean at one location, that there were documentable effects on groundwater and coastal water quality and that, in general, on-site wastewater treatment is indeed an important environmental concern and may require additional regulatory attention," de Sieyes wrote in an email exchange.

*NOAA's California Sea Grant College Program ([www.csgc.ucsd.edu](http://www.csgc.ucsd.edu)) is a statewide, multi-university program of marine research, extension services, and education activities administered by the University of California. It is the largest of 32 Sea Grant programs and is headquartered at Scripps Institution of Oceanography at the University of California, San Diego. The National Sea Grant College Program is part of the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce.*